

# TA-N110

## SERVICE MANUAL

US Model  
AEP Model  
UK Model  
E Model



### SPECIFICATIONS

#### Audio power specifications

#### POWER OUTPUT AND TOTAL HARMONIC DISTORTION:

With 8 ohm loads, both channels driven, from 20 - 20,000 Hz; rated 100 watts per channel minimum RMS power, with no more than 0.08% total harmonic distortion from 250 milliwatts to rated output

#### Other specifications

Continuous RMS power output  
(both channels driven simultaneously)

(US model)

Stereo: 50 W + 50 W

(6 ohms, 0.08%, 20 Hz - 20 kHz)

Mono: 100 W (8 ohms, 0.08%, 20 Hz - 20 kHz)

(Models for Except US)

Stereo: 50 W + 50 W

(6 ohms, 0.08%, 20 Hz - 20 kHz)

Mono: 100 W (6 ohms, 0.08%, 20 Hz - 20 kHz)

Dynamic power

(US model)

75 W + 75 W (6 ohms)

(Models for Except US)

85 W + 85 W (8 ohms)

Power bandwidth (IHF)

12 Hz - 40 kHz (6 ohms, THD 0.12%)

(US model only)

Frequency response

STEREO/FLAT: 5 Hz - 200 kHz, +0/-3 dB

3D: 5 Hz - 80 Hz, +0/-3 dB (12 dB/Oct.)

Input sensitivity

STEREO: 180 mV (50 kohms)

3D: 110 mV (100 kohms)

FLAT: 180 mV (100 kohms)

Signal-to-noise ratio

105 dB (input shorted)

(US model)

Stereo: 6 - 16 ohms

Mono: 8 - 16 ohms

(Models for Except US)

Stereo/mono: 6 - 16 ohms

#### General

System

Complementary Darlington SEPP power amplifier,  
with all stages direct coupled

Power requirements

US model: 120 V AC, 60Hz

AEP, WG model: 220V - 50/60Hz

UK model: 240V - 50/60Hz

E model: 120, 220, 240V - 50/60Hz

Power consumption

US model: 110 watts

Models for Except US: 140W

Dimensions

Approx. 470 x 120 x 265 mm (w/h/d)  
(17 x 4 3/4 x 10 1/2 inches)

Models for Except US:

Approx. 430 x 120 x 265 mm (w/h/d)

(17 x 4 3/4 x 10 1/2 inches)

including projecting parts and controls

US model:

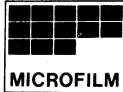
Approx. 5.9 kg (13 lb 1 oz), net

Models for Except US:

Approx. 5.3 kg (11 lb 11 oz), net

Design and specifications subject to change without notice.

STEREO POWER AMPLIFIER  
**SONY**<sup>®</sup>



#### **SAFETY-RELATED COMPONENT WARNING!!**

**COMPONENTS IDENTIFIED BY MARK  $\triangle$  OR DOTTED LINE WITH MARK  $\triangle$  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

### **SAFETY CHECK-OUT**

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

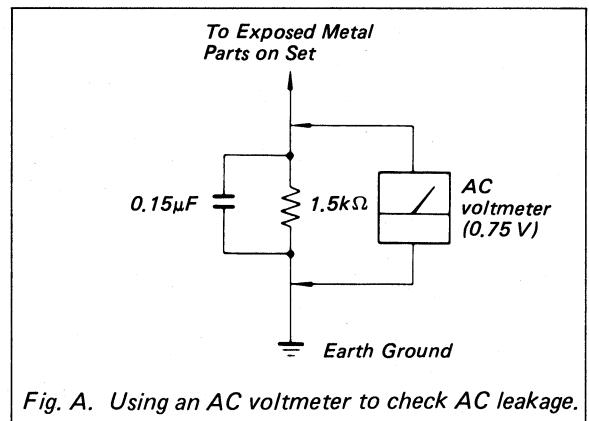
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

#### **LEAKAGE TEST**

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.

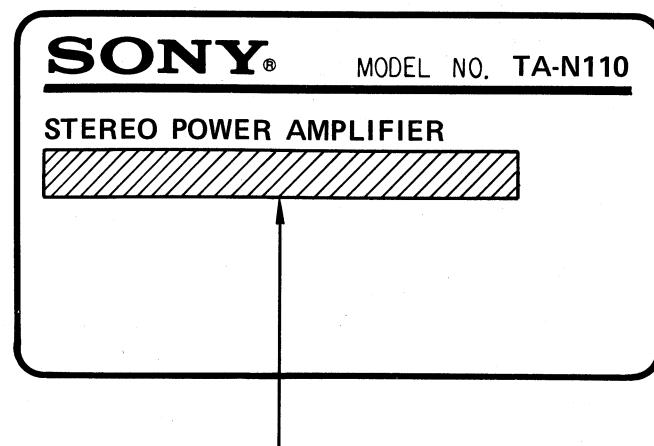
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)



*Fig. A. Using an AC voltmeter to check AC leakage.*

#### **MODEL IDENTIFICATION**

— Specification Label —



US model: AC: 120V 60Hz 110W  
AEP, WG model: AC: 220V~50/60Hz 140W  
UK model: AC: 240V~50/60Hz 140W  
E model: AC: 120, 220, 240V~50/60Hz 140W

(WG model: West Germany)

# SECTION 1

## OUTLINE

### 1-1. LOCATION AND FUNCTION OF CONTROLS

(Side panels are attached to the US model.)

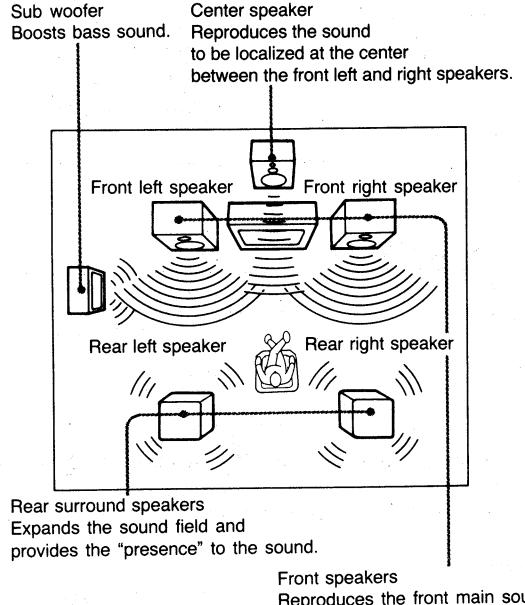
<b>[1] POWER switch</b>
<b>[2] SPEAKERS selector</b> Selects speaker system to be used. (When MONO is selected, the component connected to the MONO INPUT jack will be selected automatically as an input source.) MONO : To select the speaker system connected to the MONO SPEAKER terminals (sub woofer or center speaker). A : To select the speaker system connected to the SPEAKERS A terminals. B : To select the speaker system connected to the SPEAKERS B terminals.
<b>[3] MONO/STEREO input indicators</b> MONO : Lights up when the SPEAKERS selector is set to MONO. STEREO 1 to 3 : Lights up to show the input component selected by the STEREO INPUT when the SPEAKERS selector is set to either A or B.
<b>[4] STEREO INPUT selector</b> Selects the component to be played among the components connected to the STEREO INPUT 1 to 3 jacks on the rear panel.
<b>[5] ATTENUATOR (volume) control</b> Adjusts the sound level of the speaker connected to TA-N110.

### 1-2. OVERVIEW

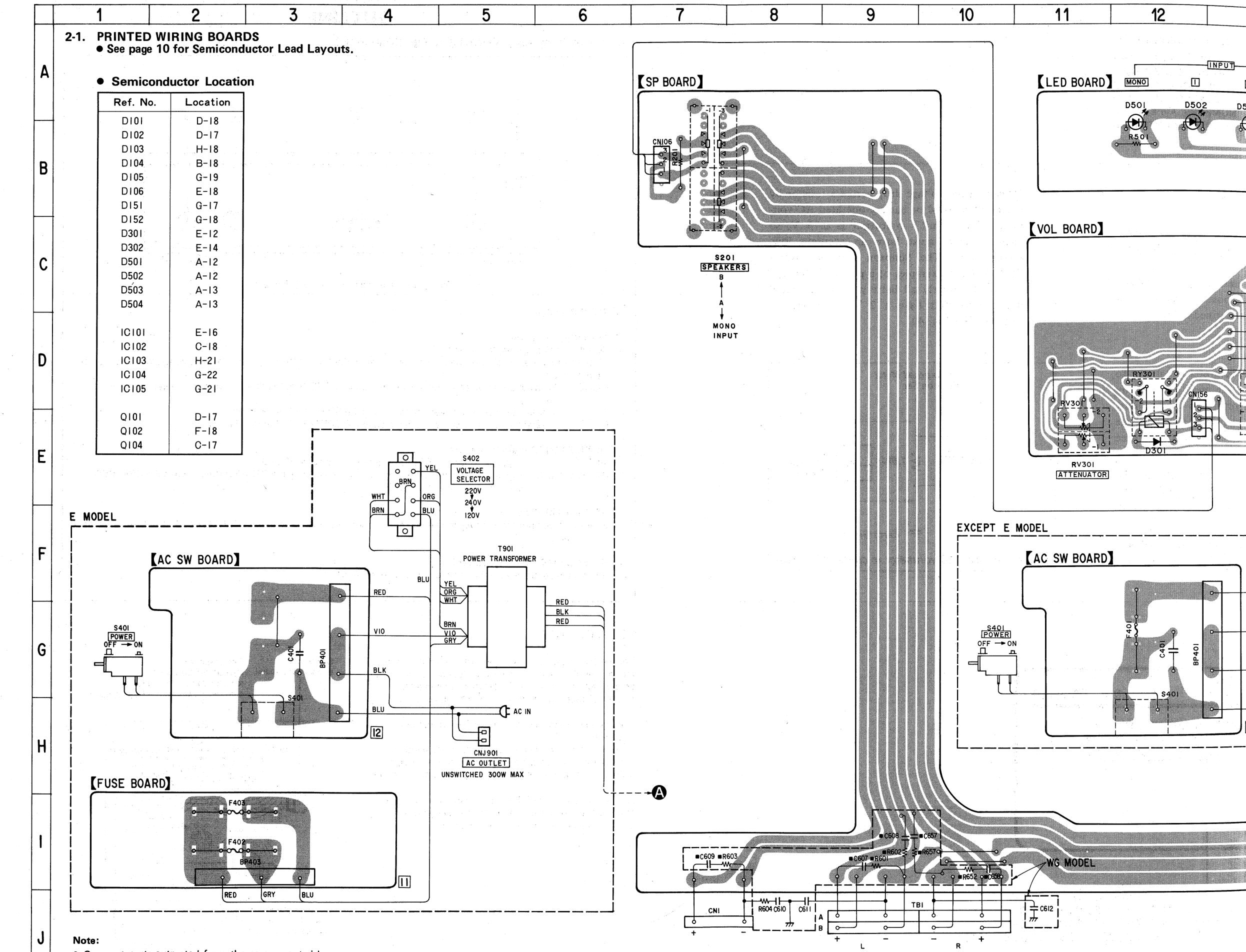
The TA-N110 is a power amplifier with selectable stereo/mono operation mode. It is suitable for use in a surround sound system. When the TA-N110 is connected to the surround processor, it can be used as follows.

- Stereo power amplifier for driving the rear surround speakers
- Stereo power amplifier for driving the front speakers
- Monaural power amplifier for driving the sub woofer.
- Monaural power amplifier for driving the center speaker.

As the TA-N110 is operable with an input voltage lower than normal power amplifier, it can be used also as an integrated amplifier or 3D system amplifier.



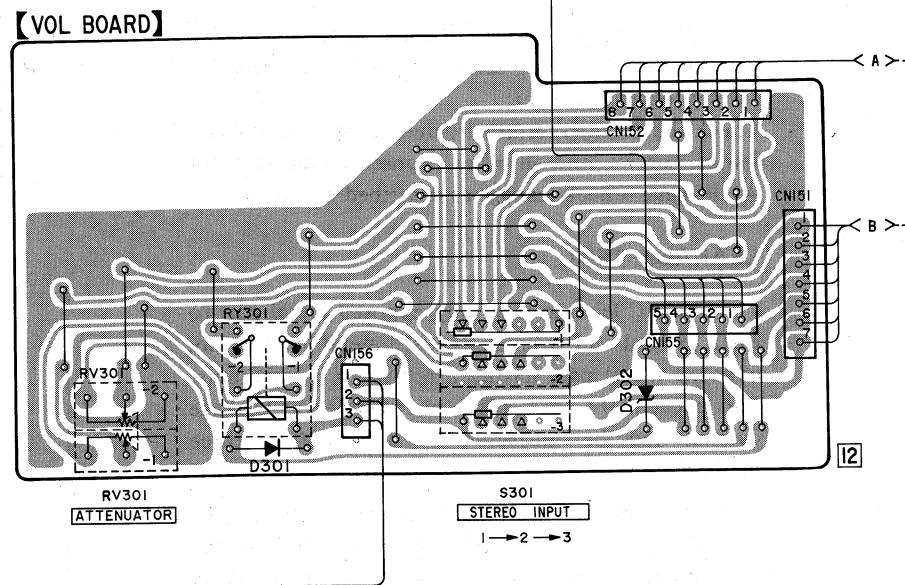
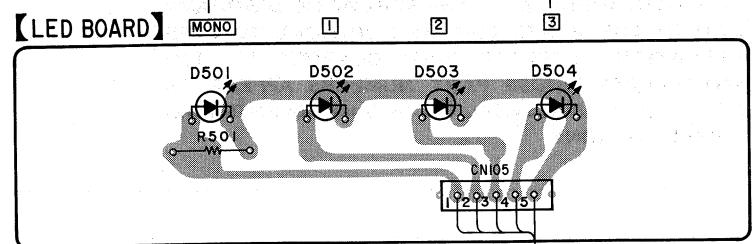
## SECTION 2 DIAGRAMS



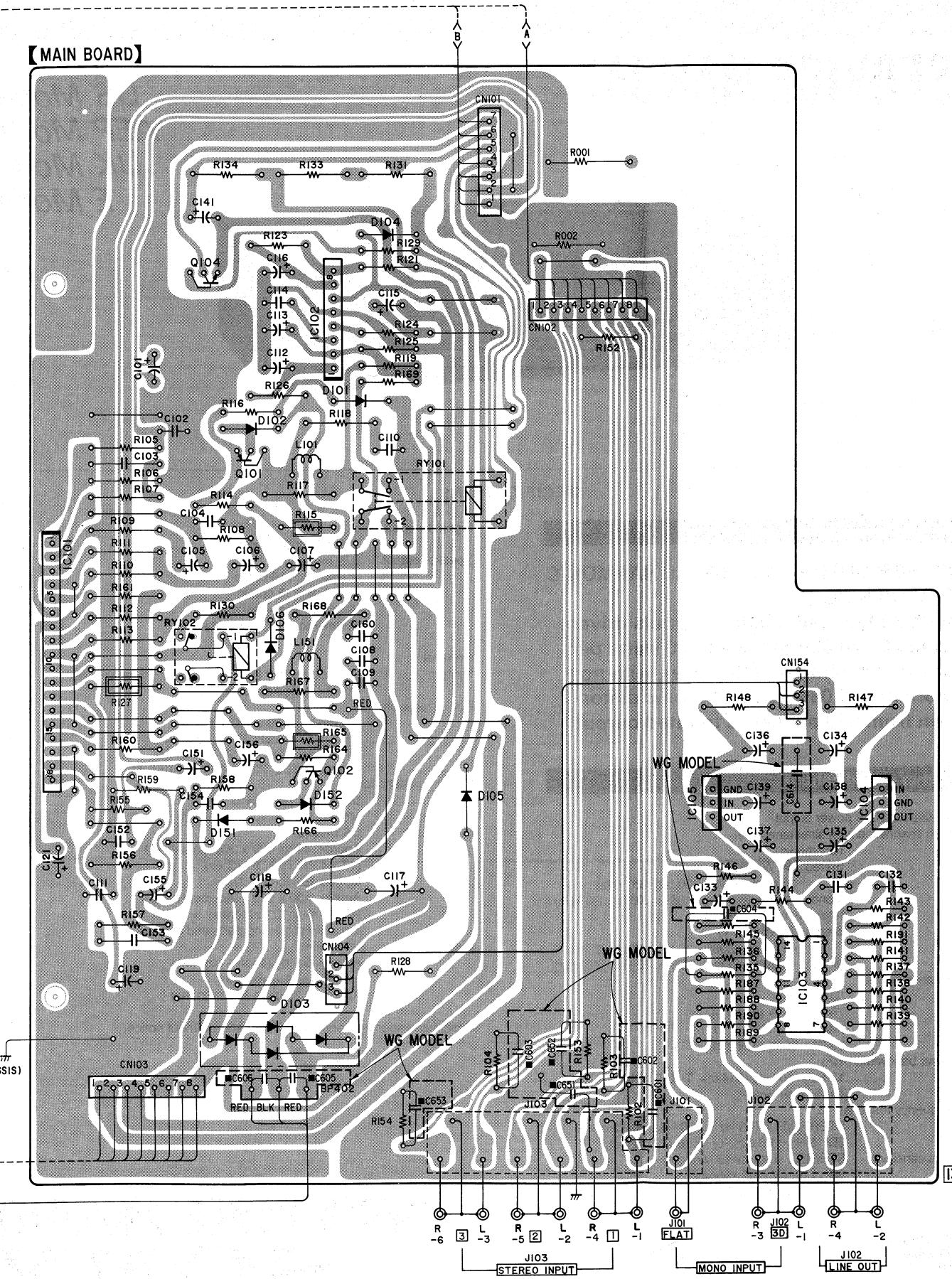
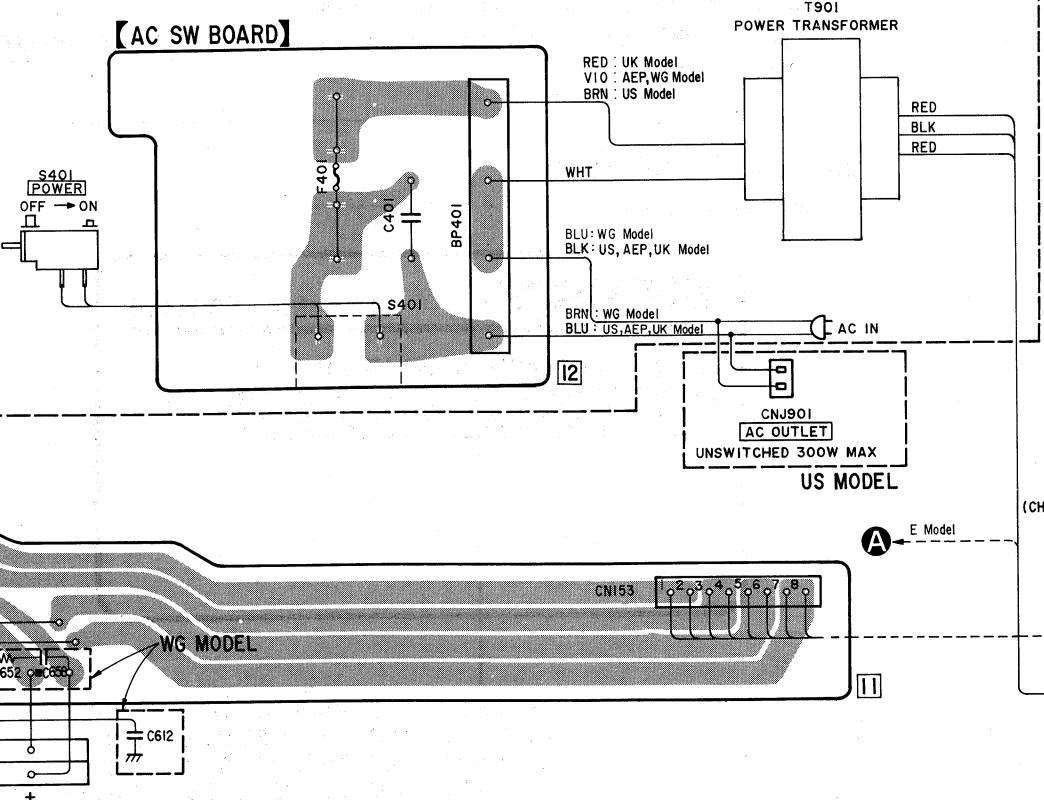
## Note:

- : parts extracted from the component side.
- : Pattern on the side which is seen.

11 12 13 14 15 16 17 18 19 20 21 22

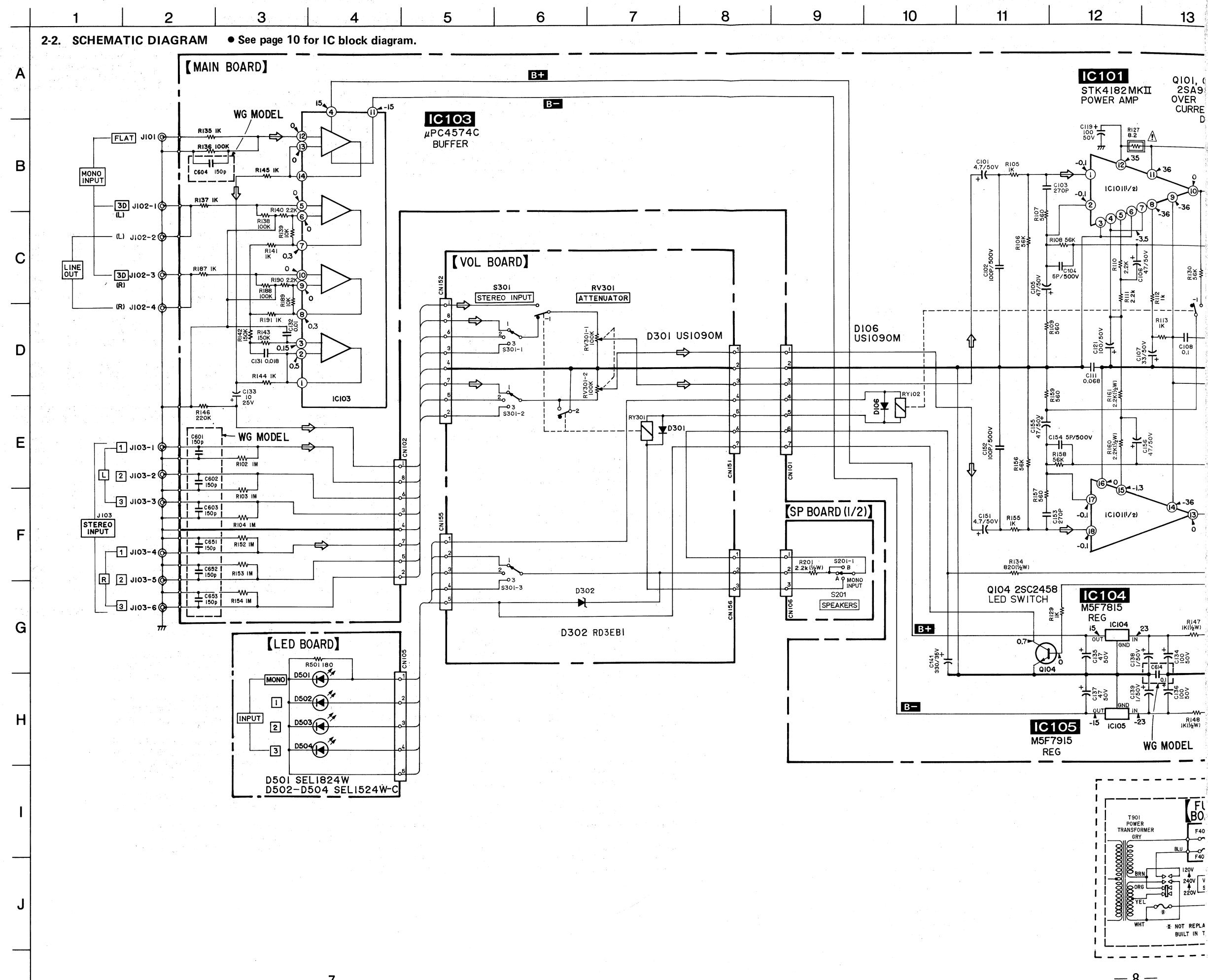


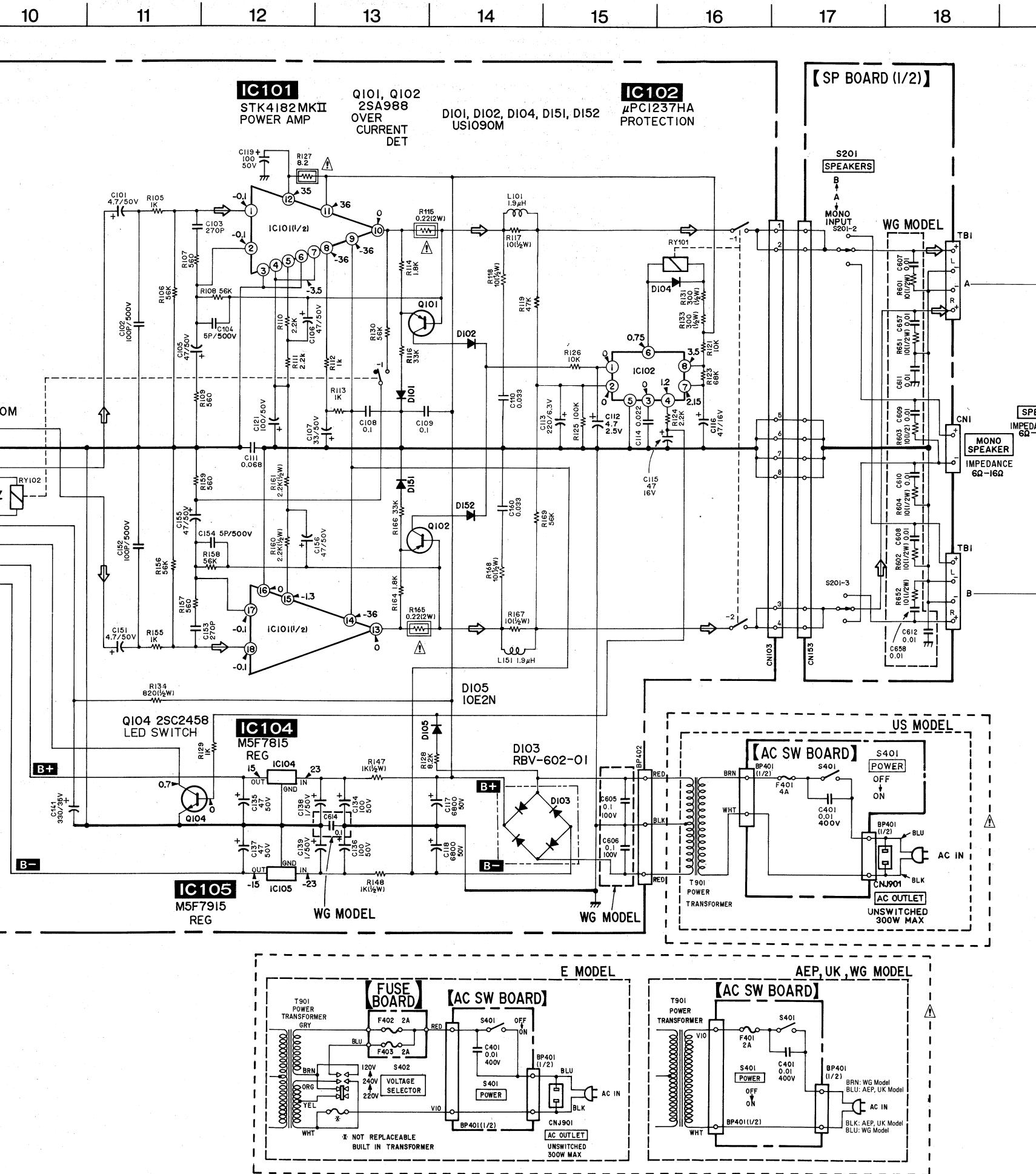
EXCEPT E MODEL



## **2-2. SCHEMATIC DIAGRAM** • See page 10 for IC block diagram.

**page 10 for IC block diagram.**





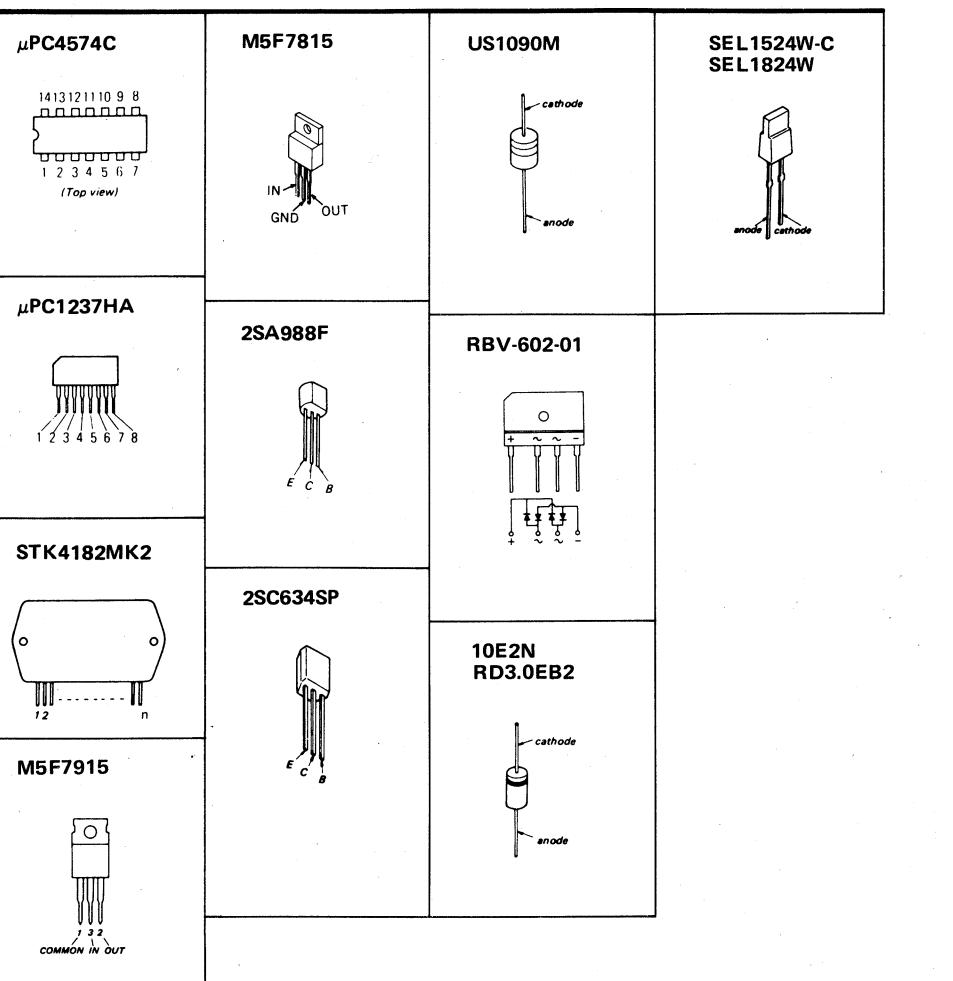
No

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. pF:  $\mu\mu\text{F}$   
50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $\frac{1}{4}\text{W}$  or less unless otherwise specified.
-  : nonflammable resistor.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (50 k $\Omega$ /V).  
Voltage variations may be noted due to normal production tolerances.
- Signal path.  
 : SOUND
- Switches

Ref. No.	Switch	Position
S201	SPEAKERS	A
S301	STEREO INPUT	1
S401	POWER	OFF

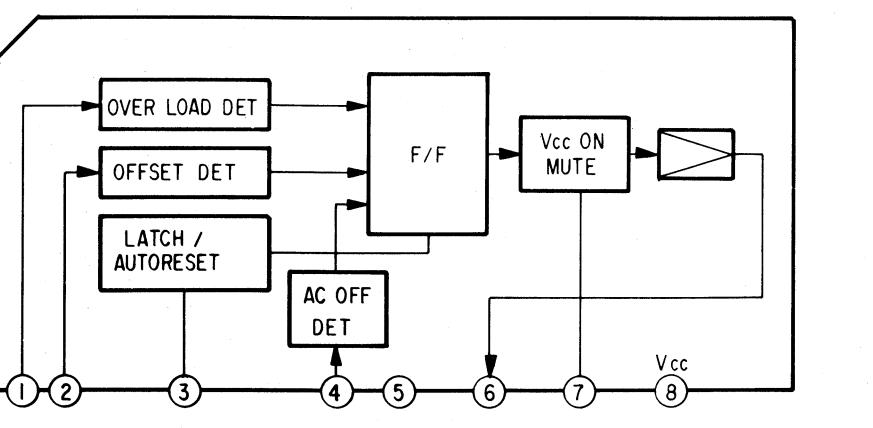
**Note:** The components identified by mark  or dotted line with mark  are critical for safety.  
Replace only with part number specified.

- Semiconductor Lead Layouts



- IC BLOCK DIAGRAMS

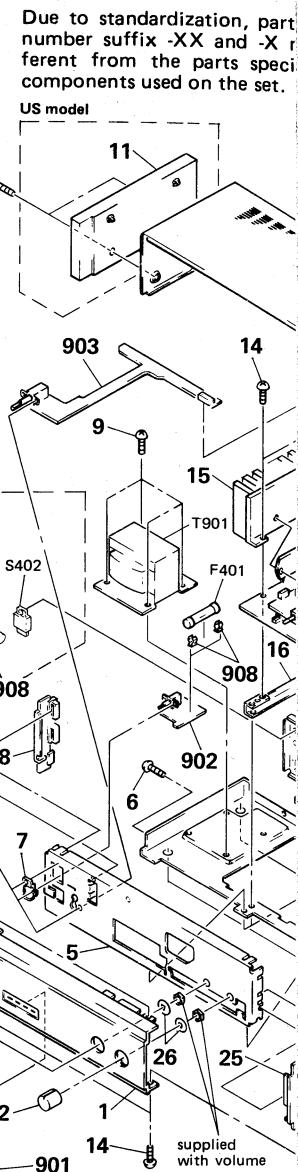
IC103 μPC1237HA



## NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

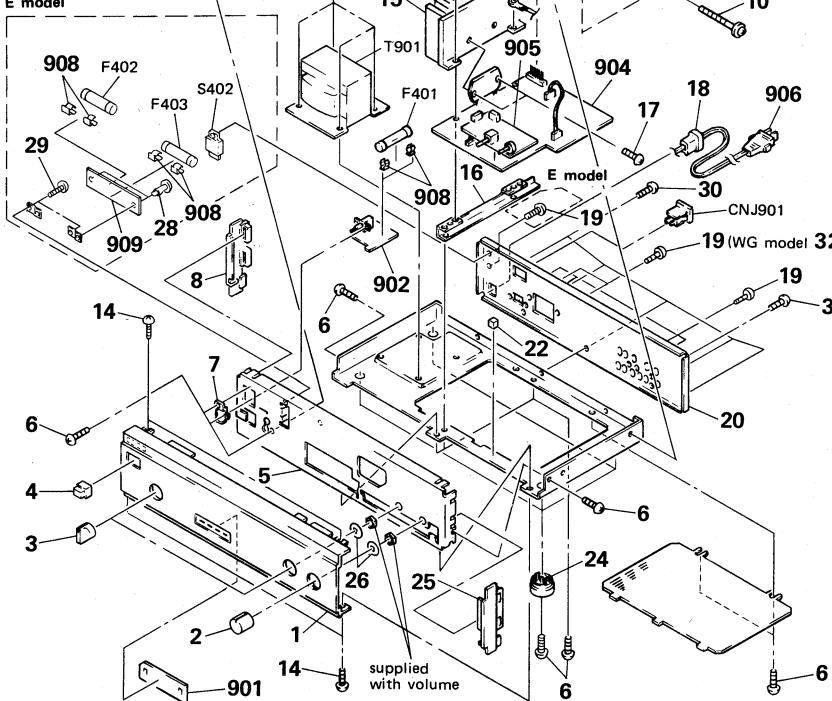


No.	Part No.	Description	Remarks	No.	Part No.
1	A-4323-003-A	PANEL ASSY		29	7-685-1
2	4-916-746-01	KNOB (DIA.21)		30	7-685-8
3	4-916-745-01	KNOB (DIA.21)		31	7-621-8
4	4-917-460-01	KNOB, POWER		32	4-887-7
5	*4-921-370-03	CHASSIS, SUB			
6	7-682-548-04	SCREW +BVTT 3X8 (S)		901	*1-626-6
7	*4-921-360-01	BRACKET (SW)		902	*1-626-6
8	*4-921-365-01	PANEL (LEFT), SIDE		903	*1-626-6
9	7-682-560-04	SCREW +BVTT 4X6 (S)		904	*1-4388-
10	3-704-366-01	(EXCEPT US)...SCREW (CASE)(MX8) (US).....SCREW, SIDE WOOD		905	*1-4388-
11	X-4904-486-1	PLATE (LEFT) ASSY, SIDE		906	△.1-559-8
12	*3-327-853-41	CASE		11	△.1-556-0
13	X-4904-485-1	PLATE (RIGHT) ASSY, SIDE		12	△.1-556-0
14	3-703-685-21	SCREW (+BV 3X8)		13	△.1-555-7
15	*4-921-322-01	HEAT SINK (A)		14	△.1-533-1
16	*4-921-314-01	BRACKET (P)		15	908
17	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3		16	909
18	*3-703-244-00	(EXCEPT E)...BUSHING (2104), CORD		17	*1-628-3
19	*3-703-571-11	(E)...BUSHING (S)(4516), CORD		18	△CNJ901.1-526-7
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S		19	△CNJ901.1-526-8
20	*4-921-359-11	(US)...PANEL, BACK		20	F401 △.1-532-2
	*4-921-359-21	(E)...PANEL, BACK		21	F403 △.1-532-2
	*4-921-359-31	(AEP)...PANEL, BACK		22	S402 △.1-570-3
	*4-921-359-41	(WG)...PANEL, BACK		23	T901 △.1-449-4
	*4-921-359-51	(UK)...PANEL, BACK		24	T901 △.1-449-4
22	9-911-843-XX	CUSHION		25	T901 △.1-449-4
24	X-4911-201-1	(US,E).....FOOT ASSY		26	T901 △.1-449-4
	X-4885-935-1	(AEP,WG,UK)....FOOT ASSY		27	T901 △.1-449-4
25	*4-921-364-01	PANEL (RIGHT), SIDE		28	T901 △.1-449-4
26	3-533-938-00	CLOTH		29	4-812-134-00
28	4-812-134-00	(E)...RIVET NYLON, 3.5			

## SECTION 3 EXPLODED VIEW

parts with no reference  
exploded views are not  
on parts of an assembled  
set with a collation num-  
ber column.  
\* are not stocked since  
not required for routine  
delay should be antici-  
pating these items.

Components identified by  
dotted line with mark  
for safety.  
with part number



Ref.No.	Part No.	Description	Ref.No.	Part No.	Description	
D104	8-719-002-83	DIODE US1090M	R136	1-249-469-11	CARBON	
D105	8-719-200-77	DIODE 10E2N	R137	1-247-713-11	CARBON	
D106	8-719-002-83	DIODE US1090M	R138	1-249-469-11	CARBON	
D151	8-719-002-83	DIODE US1090M	R139	1-247-725-11	CARBON	
D152	8-719-002-83	DIODE US1090M	R140	1-247-717-11	CARBON	
D301	8-719-002-83	DIODE US1090M	R141	1-247-713-11	CARBON	
D302	8-719-100-15	DIODE RD3.0EB2	R142	1-249-604-11	CARBON	
D501	8-719-310-83	DIODE SEL1824W	R143	1-249-604-11	CARBON	
D502	8-719-310-75	DIODE SEL1524W-C	R144	1-247-713-11	CARBON	
D503	8-719-310-75	DIODE SEL1524W-C	R145	1-247-713-11	CARBON	
D504	8-719-310-75	DIODE SEL1524W-C	R146	1-247-887-00	CARBON	
F401 $\Delta$ .1-532-203-00	(AEP,UK,WG)....FUSE, TIME-LAG (2A)		R147	1-247-752-11	CARBON	
F401 $\Delta$ .1-532-579-00	(US).....FUSE, GLASS TUBE (4A)		R148	1-247-752-11	CARBON	
F402 $\Delta$ .1-532-203-00	(E)...FUSE, TIME-LAG (2A)		R152	1-246-545-00	CARBON	
F403 $\Delta$ .1-532-203-00	(E)...FUSE, TIME-LAG (2A)		R153	1-246-545-00	CARBON	
IC101	8-749-900-34	IC STK4182MK2	R154	1-246-545-00	CARBON	
IC102	8-759-111-68	IC UPC1237HA	R155	1-247-713-11	CARBON	
IC103	8-759-113-18	IC UPC4574C	R156	1-249-466-11	CARBON	
IC104	8-759-604-34	IC M5F7815	R157	1-247-710-11	CARBON	
IC105	8-759-604-52	IC M5F7915	R158	1-249-466-11	CARBON	
J101	1-565-406-21	JACK, PIN 1P (MONO INPUT FLAT)	R159	1-247-710-11	CARBON	
J102	1-565-258-21	JACK, PIN 4P (MONO INPUT 3D/LINE OUT)	R160	1-247-756-11	CARBON	
J103	1-565-320-11	JACK, PIN 6P (STEREO INPUT)	R161	1-247-756-11	CARBON	
L101	*1-420-872-00	COIL, AIR CORE 1.9UH	R162	1-247-716-11	CARBON	
L151	*1-420-872-00	COIL, AIR CORE 1.9UH	R163 $\Delta$ .1-217-151-00	RES, METAL PLATE 0.22	2W	
Q101	8-729-108-14	TRANSISTOR 2SA988F	R166	1-247-726-11	CARBON	
Q102	8-729-108-14	TRANSISTOR 2SA988F	R167	1-247-727-11	CARBON	
Q104	8-729-600-27	TRANSISTOR 2SC634SP	R168	1-247-727-11	CARBON	
R001	1-249-496-11	CARBON	R169	1-249-466-11	CARBON	
R002	1-249-496-11	CARBON	R170	1-247-713-11	CARBON	
R102	1-246-545-00	CARBON	R171	1-247-756-11	CARBON	
R103	1-246-545-00	CARBON	R172	1-247-727-11	CARBON	
R104	1-246-545-00	CARBON	R173	1-247-727-11	CARBON	
R105	1-247-713-11	CARBON	R174	1-247-713-11	CARBON	
R106	1-249-466-11	CARBON	R175	1-247-713-11	CARBON	
R107	1-247-710-11	CARBON	R176	1-247-717-11	CARBON	
R108	1-249-466-11	CARBON	R177	1-247-717-11	CARBON	
R109	1-247-710-11	CARBON	R178	1-249-469-11	CARBON	
R110	1-247-717-11	CARBON	R179	1-247-725-11	CARBON	
R111	1-247-756-11	CARBON	R180	1-247-717-11	CARBON	
R112	1-247-713-11	CARBON	R181	1-247-713-11	CARBON	
R113	1-247-713-11	CARBON	R182	1-247-756-11	CARBON	
R114	1-247-716-11	CARBON	R183	1-247-703-11	CARBON	
R115 $\Delta$ .1-217-151-00	RES, METAL PLATE 0.22	R184	1-247-727-11	(WG)...CARBON	10 5% 1/2W	
R116	1-247-726-11	CARBON	R185	1-247-727-11	(WG)...CARBON	10 5% 1/2W
R117	1-247-727-11	CARBON	R186	1-247-727-11	(WG)...CARBON	10 5% 1/2W
R118	1-247-727-11	CARBON	R187	1-247-727-11	(WG)...CARBON	10 5% 1/2W
R119	1-249-465-11	CARBON	R188	1-247-727-11	(WG)...CARBON	10 5% 1/2W
R121	1-247-725-11	CARBON	R189	1-247-727-11	(WG)...CARBON	10 5% 1/2W
R123	1-249-467-11	CARBON	R190	1-247-717-11	CARBON	2.2K 5% 1/4W
R124	1-247-717-11	CARBON	R191	1-247-713-11	CARBON	1K 5% 1/4W
R125	1-249-469-11	CARBON	R192	1-247-756-11	CARBON	2.2K 5% 1/2W
R126	1-247-725-11	CARBON	R193	1-247-703-11	CARBON	180 5% 1/4W
R127 $\Delta$ .1-249-458-11	CARBON	R194	1-247-727-11	(WG)...CARBON	10 5% 1/2W	
R128	1-247-724-11	CARBON	R195	1-247-727-11	(WG)...CARBON	10 5% 1/2W
R129	1-247-713-11	CARBON	R196	1-247-727-11	(WG)...CARBON	10 5% 1/2W
R130	1-249-466-11	CARBON	R197	1-247-727-11	(WG)...CARBON	10 5% 1/2W
R131	1-244-860-11	CARBON	R198	1-247-727-11	(WG)...CARBON	10 5% 1/2W
R133	1-244-860-11	CARBON	R199	1-247-727-11	(WG)...CARBON	10 5% 1/2W
R134	1-247-751-11	CARBON	R200	1-247-727-11	(WG)...CARBON	10 5% 1/2W
R135	1-247-713-11	CARBON	R201	1-238-176-11	RES, VAR, CARBON	100K/100K (ATTENUATOR)
			RY101	1-515-533-11	RELAY	
			RY102	1-515-614-11	RELAY	
			RY301	1-515-614-11	RELAY	
			S201	1-571-545-11	SWITCH, ROTARY (SPEAKERS)	
			S301	1-571-546-11	SWITCH, ROTARY (STEREO INPUT)	
			S401 $\Delta$ .1-554-920-11	SWITCH, PUSH (AC POWER)(1 KEY)(POWER)		
			S402 $\Delta$ .1-570-307-11	(E)...SWITCH, VOLTAGE CHANGE (VOLTAGE SELECTOR)		
			T901 $\Delta$ .1-449-434-11	(US).....TRANSFORMER, POWER		
			T901 $\Delta$ .1-449-436-11	(AEP,WG)...TRANSFORMER, POWER		
			T901 $\Delta$ .1-449-435-11	(E).....TRANSFORMER, POWER		
			T901 $\Delta$ .1-449-445-11	(UK).....TRANSFORMER, POWER		
			TB1	1-536-706-00	TERMINAL BOARD (SPEAKER)	

Note: The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

## ACCESSORY &amp; PACKING MATERIAL

A.1-526-565-00 (E)....AC PLUG ADAPTOR  
 \*3-701-948-17 (EXCEPT US)...LABEL, FUSE  
 \*3-701-030-00 LABEL, SERIAL NUMBER  
 3-703-450-01 INSTRUCTION  
 \*3-704-346-01 SHEET (STANDARD), PROTECTION  
 3-786-064-11 MANUAL, INSTRUCTION  
 \*3-346-378-01 (EXCEPT US)...INDIVIDUAL CARTON  
 \*4-921-373-11 (US).....INDIVIDUAL CARTON  
 \*4-921-311-01 (EXCEPT US)...CUSHION  
 \*4-921-371-01 (US).....CUSHION

Note: The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

## Block Diagram

